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Abstract: A newly developed solid-state repetitive high-voltage (HV) pulse modulator topology created from the mature concept of the d.c. voltage multiplier (VM) is described. The proposed circuit is based in a voltage multiplier type circuit, where a number of d.c. capacitors share a common connection with different voltage rating in each one. Hence, besides the standard VM rectifier and coupling diodes, two solid-state on/off switches are used, in each stage, to switch from the typical charging VM mode to a pulse mode with the d.c. capacitors connected in series with the load. Due to the on/off semiconductor configuration, in half-bridge structures, the maximum voltage blocked by each one is the d.c. capacitor voltage in each stage. A 2 kV prototype is described and the results are compared with PSPICE simulations.

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